U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE
SUBCOMMITTEE ON ENVIRONMENT, TECHNOLOGY, AND STANDARDS

HEARING CHARTER
"China, Europe, and the Use of Standards as Trade Barriers: How Should the U.S. Respond?"
Wednesday, May 11, 2005
2:00 P.M – 4:00 P.M.
2318 Rayburn House Office Building

PURPOSE:

On Wednesday, May 11, at 2:00 p.m. the House Science Committee's Subcommittee on Environment, Technology, and Standards will hold a hearing to review the increasing use by U.S. trading partners of technical standards and other standards-related requirements as barriers to trade, and what U.S. companies, standards development organizations, and the Federal Government are doing, and could do, to overcome or reduce these barriers.

WITNESSES:

Dr. Hratch Semerjian is the Acting Director of the National Institute of Standards and Technology (NIST).

Mr. Robert W. Noth is the Manager of Engineering Standards for Deere & Company, headquartered in Moline, Illinois.

Dr. Don Deutsch is the Vice President for Standards Strategy and Architecture for Oracle, headquartered in Redwood Shores, California.

Mr. Joe Bhatia is the Vice President for International Operations at Underwriters Laboratory (UL). UL is a commercial laboratory company that tests products against U.S. and international standards, headquartered in Northbrook, Illinois.

Mr. David Karmol is the Vice President of Public Policy and Government Affairs at the American National Standards Institute (ANSI).

OVERARCHING QUESTIONS:

The subcommittee plans to explore the following overarching questions:

1. What are standards and why are they important to the global competitiveness of U.S. companies?

2. How are standards developed in the U.S.? How is this different from the way standards are developed in our major trading partners such as Europe and Asia?

3. Is the U.S. system at a disadvantage in the global standards arena? If so, what should the Federal Government, states, U.S. standards development organizations, and companies be doing to reduce their vulnerability to the use of standards as trade barriers, and how could they promote the adoption of non-exclusionary standards in the global marketplace? What are the merits and drawbacks of these different systems?

BACKGROUND

What Is a Standard?

A standard is a technical specification for a product, process, or service. Standards are used to ensure uniformity and interoperability. For example, standards make it possible for cellular phones made by different companies to communicate with each other regardless of location. Standards ensure that the electrical power grid provides electricity to homes and businesses in the same way across the U.S. Another example of a standard is the worldwide uniform electronic standard that governs the format of credit cards, enabling them to processed anywhere in the world where credit cards are accepted. Standards are frequently referenced by or tied to government regulations to describe or even dictate the technologies or processes expected to achieve the goals of regulations, and to ensure compliance. For example, the Federal Communications Commission (FCC) regulations for the formats for black and white, color, and high-definition television are based on technical standards.

Why Are Standards Important?

Standards play a powerful role in domestic and international markets. If a standard achieves broad acceptance in a market, it may lead to the abandonment of technologies supported by alternative standards and the domination of a market by a specific technology. An example is the gradual loss of market share by Sony's Betamax video recording standard in the 1980s during the early years of video cassette recorders (VCRs), as the Matsushita VHS standard became more popular. Once the competition between the two standards had been resolved by the dominance of one over the other, the uncertainty of which technology to invest in disappeared, and the market for VCRs grew rapidly.

Standards facilitate the growth of markets by assuring predictability and interoperability. For example, agreements between manufacturers on communications standards provide certainty for the entire cell phone market, "telling" designers and providers of peripheral services such as email, web services, and the ability to take and send pictures what formats they need to use to provide compatible add-ons to consumers. If there are multiple standards for a type of product, the uncertainty about which standard will eventually dominate can paralyze investments into related technologies, or result in a fragmented market with multiple technologies that cannot work together. International standards promote international trade by ensuring that the same product can be sold and used anywhere, regardless of origin, which is convenient for manufacturers and customers alike.

How Are Standards Used As Trade Barriers?

Countries can use standards as trade barriers by setting domestic standards that are different from those which foreign manufacturers would have normally used. (This can happen inadvertently as well as deliberately.) This increases the costs of exporting to the country in question because the

companies trying to export there must change their product lines to meet the special standards requirements of that country. The existence of unique standards is also a bureaucratic disincentive for exporters to do business, particularly small and medium-sized enterprises that do not have the resources to learn about, understand, and work through often complex or obscure specifications. For example, countries may require a different standard for safety belts or emission controls in automobiles that must be tested for, or institute a complicated testing procedure for imported telecommunications goods.

Companies worldwide are worried that such measures could escalate into "standards wars," with countries closing their markets to imports with technical requirements, rather than tariffs. This concern was partly responsible for the creation of the World Trade Organization (WTO), which includes the Technical Barriers to Trade (TBT) agreement, a very detailed document that lays out the principles that countries should not use technical standards as trade barriers, should adopt international standards whenever possible or practicable, and should work on harmonizing standards through international standards organizations. However, the TBT includes fairly significant exceptions for countries to exercise their authority in the areas of health, safety, and national security, and it is these exceptions that are often cited when a country sets a new standard to block imports. It is important to note that although U.S. companies frequently complain about technical standards as trade barriers abroad, our trading partners frequently voice similar concerns about standards barriers in the U.S. market, particularly with respect to telecommunications and information technology equipment.

The following are some examples of standards-related problems U.S. companies are beginning to report as presenting or potentially presenting serious barriers to U.S. trade:

China: Wi-Fi versus WAPI

In an effort to promote an independent economy based on home-grown technologies, China has stated in its standards strategy that it plans to develop mandatory domestic technical standards based on Chinese technology and intellectual property, rather than adopt existing industry or international technical standards and having to pay license fees for non-Chinese technology.

To this end, in 2004, the Chinese government announced that it would require all wireless-enabled devices to meet a Chinese wireless standard, beginning June 1 of that year. The Chinese standard is called "WAPI" - Wireless Authentication and Privacy Infrastructure. The Chinese cited the WTO TBT national security loophole, saying that the WTO principles of non-discrimination did not apply in this case for national security reasons. The globally accepted standard for wireless internet (Wi-Fi) is IEEE (Institute of Electrical and Electronics Engineers) 802.11i. The global semiconductor industry had been manufacturing their silicon chips to meet this standard and a variety of related electronics manufacturers were designing products to be compatible with it. What was most distressing to non-Chinese manufacturers, however, was China's requirement that a limited number of Chinese companies would be licensed to build and certify products to WAPI, and any foreign manufacturer who wanted to comply with the standard and do business in China would have to partner with a Chinese company.

Responding to vigorous lobbying by U.S. industry, in March 2004, U.S. Secretary of Commerce Don Evans, U.S. Trade Representative Robert Zoellick, and Secretary of State Colin Powell

intervened, and in April 2004, the Chinese government agreed to postpone the implementation of the standard indefinitely, and participate in the implementation of a global standard.

Since then, China has been working to get the WAPI standard accepted via the International Standards Organization (ISO) process in order to make it an international standard. The ISO is a body made up of representatives from 100 countries, and is a forum for the development of global standards. Its deliberations are extremely formal and process-oriented. WAPI was considered in February 2005, but when the ISO voted to take the WAPI standard off its "fast-track" process, China walked out of the negotiations, citing unfair treatment. Some Chinese accused the U.S. of blocking the process. Meanwhile, IEEE's 802.11i standard was fast-tracked for approval by ISO. There have been no significant developments since then, but China plans to manufacture products for the Chinese market according to the WAPI standard, and hopes that market forces and the size of its domestic market will cause the WAPI standard to be widely adopted.

Standards experts say that, in spite of the apparent setback, China will continue to try to promulgate unique, exclusionary standards for its domestic market. They also say that China intends to increase its presence within international standards bodies such as the ISO, and is eager to assume a leadership role on several of ISO subcommittees in order to better position itself to set standards-setting agendas in the future.

Europe: Domination of International Standards Bodies

Some U.S. companies and industries are very alarmed that the European Union, having harmonized most of its technical standards among its membership, has exhibited a tendency to vote as a bloc at international standards meetings. With 15-25 votes, the EU can exercise significant influence in the 100-member ISO. More broadly, U.S. companies that are active in international standards are concerned that the U.S. commitment to and consistency of participation in international standards processes is not as great as that practiced by the Europeans, and the lack of a coherent strategy to guide U.S. participation is impeding the U.S. ability to act forcefully in the standards arena.

Europe: Standards Aid to Developing Countries

In contrast to China, the European Union has adopted a very outward-looking, export-oriented standards strategy which is geared towards developing new markets for EU-made goods. In addition to using its national standards as barriers to foreign imports, the EU is actively promoting its standards among developing countries as a way to give an advantage to EU-made goods. U.S. manufacturers are worried because the European Commission has an explicit policy on this issue, provides significant financial support for these efforts, and sends European delegations to developing countries to help them launch their own standards initiatives, based on European standards and the European system of standards development, which is a government-run and supported process.

U.S. companies warn that, because the U.S. has not been actively promoting its more de-centralized standards system in the emerging markets of developing countries, these governments are unfamiliar and thus less comfortable with that concept. As a result, they are less apt to adopt the U.S. model, even though it is less bureaucratic, more flexible, and more market-

oriented. The U.S. system uses an open and transparent process that solicits the opinion and permits the direct participation of all interested firms and other entities. Instead, these countries adopt centralized, government-controlled standards development systems that are more likely to take an active, interventionist role in creating standards specifically designed to protect domestic industries. When they do adopt foreign standards, these governments are more likely to adopt a European standard over a U.S. one.

How Can the U.S. Respond?

Standards experts argue that the U.S. must take a more active role in the international standards arena and take steps to increase its support for domestic and international standards development, negotiation, and technical assistance. There are several basic ways in which the U.S. government or U.S. companies could reduce the use of standards as trade barriers to U.S. products:

- ***National Standards Strategy***

The American National Standards Institute (ANSI) is developing a U.S. Standards Strategy document in collaboration with its membership, independent standards consortia, and Federal agencies, particularly the Department of Commerce. This document, currently in draft form, contains a number of recommendations on what steps ought to be taken to reduce the incidence of standards-related trade barriers. This document emphasizes that the current system of standards development in the U.S. works well, but that government (both state and Federal) and industry must work together in a more coordinated fashion and commit more resources to ensure that the system is adequately supported. The strategy also says that standards should be developed in as fair and open a process as possible, and that the Federal government should work with its counterparts in other countries to prevent standards from becoming trade barriers.

- ***Department of Commerce Standards Initiative and Report***

In 2003, the Department of Commerce launched a standards initiative to bring more focus and resources to address the trade barriers problem. The Department of Commerce in 2004 published a paper entitled "Standards and Competitiveness: Coordinating for Results," which included 57 recommendations. As a result, some efforts have been made within the Department of Commerce to ensure that different agencies that are involved in standards coordinate their activities and share information, most notably NIST and the International Trade Administration (ITA). Observers have commented that more funding is needed to hire subject-matter experts and place them in strategic locations around the world, and pay for standards training for existing trade officers. Furthermore, they note that the Department of State and U.S. Trade Representative's office and other agencies involved in trade need to be brought into the process to address the issue most comprehensively.

- ***Standards Outreach to Trading Partners***

Although the China-WiFi case is cited as a victory by some, others say that this incident should not become a model for how to resolve a standards conflict, because the incident soured relations between the U.S. and China in the standards arena at a time when standards experts say the U.S. should be reaching out to China. U.S. industry groups have urged the U.S. government to work on improving interactions with China in the standards arena, such as providing technical assistance to China and other key Asian countries to help them meet their WTO TBT obligations.

Standards development organizations point out that the standards development environment is often collegial and cooperative, and provides many opportunities to settle technical differences before they manifest themselves in standards wars. ANSI and other participants in international standards negotiations say that a substantial effort should be made by all U.S. participants in the standards development process to build a constructive educational dialogue with the Chinese, not just on standards themselves, but also on the process issues: how the U.S. method of industry-driven standards development works, and what its advantages are.

To counter the European Union's outreach to developing countries, standards experts recommend that the Federal government and/or U.S. companies begin a similar campaign to tout the benefits of the U.S.-style of standards development in emerging markets in South America and Southeast Asia. Industry groups such as the National Association of Manufacturers warn that the U.S. has a significant amount of catching up to do in this area, and should increase funding for technical assistance to these countries through such agencies as the U.S. Agency for International Development (USAID), and ensure these programs are promoting U.S., rather than European standards and standards-development processes.

- ***Domestic Standards Awareness and Education***

U.S. industries, the Federal government, and to a lesser extent state and local governments, appear to be developing a greater awareness of the importance of standards in international trade, and their significance as an instrument of trade policy. However, academics and industry experts together have pointed out that the subject of standards and their relevance are not part of engineering or business school curricula, and therefore are not "baked in" to the fundamentals of running a business or designing products. These experts suggest grant programs to encourage the development of standards curricula for use in business and engineering schools, as well as a broader effort to encourage these institutions to incorporate some kind of standards education into their programs. Greater awareness should also be cultivated within companies, particularly small and medium-sized enterprises that are not as exposed to international trade issues, but are increasingly becoming so.

- ***Standards Assistance to Small and Medium-Sized Enterprises***

Major corporations with an international presence are usually more aware of standards issues, and can afford to hire standards experts or create an office to manage, track, and participate in international standards processes. Small businesses, however, are generally not as knowledgeable about international trade, and do not have the resources to hire experts and translators necessary to work through the complex business of getting their products certified in a foreign country. The ITA has begun to make some efforts to educate its own staff, particularly the Foreign Commercial Service (FCS), on the standards issues. In addition, ITA plans to place standards experts in several countries, including a standards liaison in Beijing in the summer of 2005.

- ***Standards Infrastructure Support***

European Union members of international standards-setting bodies, and increasingly China and other Asian countries, provide greater levels of support (funding, logistics, technical resources, etc.) to their standards representatives than does the U.S. government. Frequently, many of the delegates sent to international standards setting organizations by other countries are not only

subject matter experts, but also government representatives. The U.S. participants in these processes have suggested that more resources be provided by the U.S. government for technical support by NIST, whose representatives participate extensively in international negotiations. They also suggest that either U.S. companies or the U.S government should provide funding to standards development organizations and ANSI to boost representation in the international arena, since a more consistent and forceful U.S. presence at the standards meetings would lead to international standards that are more in line with U.S. interests.

ADDITIONAL BACKGROUND

How Does the U.S. Standards Development System Work?

Any standard is the product of a collaborative process. In the United States there are hundreds of Standards Development Organizations (SDOs) and Standards Consortia. They are known collectively as Standards Setting Organization (SSOs). The membership of SSOs may consist of companies, Federal agencies, non-profits, and other participants. SSOs develop and adopt standards acceptable to their members through a consensus process.

The traditional U.S. SDOs support themselves by selling the documents containing the standards to users. Many SDOs represent well-established industries that over the years have developed highly formal processes for the proposal, consideration, and acceptance of standards.

"Open Standards" are a popular way of developing standards, where the standards are developed in open forums and made available on a royalty-free basis on the premise that the more inclusive and cost-free the standard, the wider will be its adoption. This method of developing standards is particularly common in the internet-related hardware and software industries.

"Global Standards" are standards that are uniform around the world. Internet protocols, for example, which govern how information is organized and transmitted through the internet, are global standards, developed by the World Wide Web Consortium, or W3C. Another example is the standardized dimensions for shipping containers. The field of global standards can be a contentious one, for a global standard often compromises between existing standards, or requires abandoning many standards for a single one. The European Union has extensive experience in this area from harmonizing the standards of its members. Global standards are unusual, but there is a movement to try to develop and promote them because of their convenience and growing necessity in an increasingly interconnected world.

The American National Standards Institute (ANSI)

ANSI is a non-profit umbrella group for SDOs that accredits the standards development procedures of its member organizations, helps coordinate standards activities in the U.S., provides a forum for its members to discuss standards issues, and is the U.S. representative at two major international standards bodies: The ISO and the International Electrotechnical Commission (IEC). ANSI's membership includes most of the major U.S. manufacturers, as well as universities, government agencies, testing laboratories, and other entities. About two hundred SDOs in total are accredited by ANSI.

Although it represents the U.S. in the ISO and other international groups, unlike its foreign counterparts, ANSI is a non-governmental entity. Hence, ANSI's role as a coordinator of the U.S. is similar to, but not exactly the same as the role that foreign governments play in standards development abroad. In the U.S., the role of the government is largely one of support, providing input where government input is required, and providing some of the scientific and technical expertise and research that is needed for any effective standards regime, mostly through NIST, but also through other Federal agencies that relate to health and safety.

Testing Laboratories and Testing Procedures in Trade: Conformity Assessment
Companies that decide to manufacture products based on a given standard have to show that their products are compliant with it. This is verified by having their products tested against the standard at a testing lab, and the procedure is known as "conformity assessment." These non-profit and for-profit laboratories test products to ensure that they meet the specifications of the appropriate standards and provide verification of this to consumers and other companies. There are hundreds of testing laboratories in the U.S. and thousands world-wide. The testing procedures can also constitute trade barriers through the imposition of lengthy and complicated requirements for foreign manufacturers. For example, China has instituted the China Compulsory Certification Mark, which requires companies exporting in a wide range of categories to have their products tested first. Often, national standards require that the tests be performed in the laboratories of the country in question, in some cases the government-run standards laboratories there. This is also a cause for concern to U.S. companies that fear possibility of having their intellectual property stolen during the testing process.

As markets have become more global and more companies sell their products out of their home countries, nations have started engaging in Mutual Recognition Agreements (MRAs) which allow testing laboratories in other countries to test products against foreign standards. The WTO TBT agreement includes language encouraging the use of MRAs to facilitate the testing process, but the use of MRAs worldwide is not comprehensive.

How are standards developed in other countries?
In Europe and Asia, the system of standards development is different from that in the U.S. Although the standards development processes in other countries is still a collaboration between companies and other groups, the government play a much more direct role. Governments provide secretariats to manage their domestic standards development processes, publish the standards, and support the country representation at international standards meetings. Moreover, the standards developed are government-subsidized and are provided to the user community for free. This makes the adoption of these standards more attractive, and this policy is being pushed, particularly by the European countries, into emerging markets which may not necessarily have standards of their own. This approach to standards development is more top-down, although companies still participate heavily in the processes.

National standards strategies
In recognition of the importance of standards to their domestic economic development and ability to penetrate markets abroad, several countries have developed and published national standards strategies which outline how they will promote their standards in the global trade system. They believe that standards are an effective strategic tool in the world trade arena, and

these opinions are borne out in these standards strategies. Standards strategies are being developed to help focus the resources and management of countries' standards infrastructures as a way of extending specific standards regimes to emerging markets and thus ensure access to these markets for their products.

These governments see participation in international standards activities as a way to promote their economic interests. Recently, the Europeans have been promoting their standards development system in other countries to enable access to these markets by European goods.

For example, the German Standardization Strategy states:

> In the face of increasing market globalization and growing competition, the international standardization system needs to be strengthened as the basis for uniform regional and national standards. Alliances should be created to support the introduction of the European model…this approach could effectively promote the goals of German industry in accessing global markets. Given the importance of establishing German industry in emerging economies and in the markets of the new and future EU member states, appropriate action must be taken to gain an early market presence. A vital task in this context is to communicate an appreciation of the benefits of the European standardization system and to offer assistance in its adoption.

QUESTIONS FOR THE WITNESSES

Dr. Hratch Semerjian, Acting Director, National Institute of Standards and Technology (NIST)

Briefly describe how NIST supports standards development and answer the following questions:

1. What is NIST's role in the international standards arena?

2. Describe the Department of Commerce's standards document "Standards and Competitiveness: Coordinating for Results" and the status of the implementation of its recommendations. What remains to be done?

3. How would NIST's FY 2006 budget request improve the U.S. position with respect to standards development? Describe any other NIST standards initiatives that would contribute to the competitive position of U.S. industry.

Mr. Robert W. Noth, Manager of Engineering Standards, Deere & Company
Dr. Don Deutsch, Vice President for Standards Strategy and Architecture, Oracle
Mr. Joe Bhatia, Vice President for International Operations, Underwriters Laboratory

1. What has been the experience of your company with Chinese and European technical standards, and how do you work with these countries in this area? What are your concerns regarding the technical standards and standards practices of other countries?

2. For your industry, how are standards developed in the U.S.? How is this different from the way standards are developed in our major trading partners such as Europe and Asia? What are the merits and drawbacks of these different systems? Is the U.S. system at a disadvantage in the global standards arena, and if so, why?

3. What should the Federal Government, States, U.S. standards-setting organizations, and companies be doing to reduce your vulnerability to the use of standards as trade barriers, and how could they promote the use of non-discriminatory standards in the global marketplace? How should these efforts be coordinated?

Mr. David Karmol, Vice President for Public Policy and Government Affairs, American National Standards Institute (ANSI)

Briefly describe ANSI's role in national and international standards development and answer the following questions:

1. What has been China's and Europe's approach to the development and use of standards? How is this approach changing international standards development in organizations such as the International Standards Organization, and through bilateral relations with other countries? What are the implications for U.S. trade with China and the rest of the world?

2. Based on the U.S. Standards Strategy that ANSI has been developing, what should the Federal Government, States, U.S. standards development organizations, and companies be doing to reduce their vulnerability to the use of standards as trade barriers, and how could they promote the adoption of non-exclusionary standards in the global marketplace? How should these efforts be coordinated?